

Abstract of the Disclosure

A method of forming a SiGe layer having a relatively high Ge content includes preparing a silicon substrate; depositing a layer of strained SiGe to a thickness of between about 100 nm to 500 nm, wherein the Ge content of the SiGe layer is equal to or greater than 20%, by
5 molecular weight; implanting H_2^+ ions into the SiGe layer; irradiating the substrate and SiGe layer, to relax the SiGe layer; and depositing a layer of tensile-strained silicon on the relaxed SiGe layer to a thickness of between about 5 nm to 30 nm.